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This Genetically Engineered Ingredient Is in Nearly Everything You Eat

Hydrogenated genetically engineered soybean oil is one of the most harmful types of oils you can consume, yet it's found in nearly all processed foods.

By **Dr. Joseph Mercola** 16

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Story at a glance:

- Two of the most harmful ingredients in processed foods are high fructose corn syrup and soybean oil, whether partially hydrogenated, organic or made from newer soybean varieties modified in such a way as to not require hydrogenation.
- Completely unnatural man-made fats created through the partial hydrogenation process cause dysfunction and chaos in your body on a cellular level, and studies have linked trans-fats to health problems ranging from obesity and diabetes to reproductive problems and heart disease.
- Besides the health hazards related to the trans fats created by the partial hydrogenation process, soybean oil is, in and of itself, NOT a healthy oil.
- Add to that the fact that the majority of soybeans grown in the U.S. are genetically engineered, and as a result saturated with dangerous levels of the herbicide glyphosate, which may have additional health consequences as there are no long-term safety studies.
- When taken together, partially hydrogenated GE soybean oil becomes one of the absolute worst types of oils you can consume.
- The genetically engineered (GE) variety planted on over 90% of U.S. soy acres is Roundup Ready engineered to survive being doused with otherwise lethal amounts of Monsanto's Roundup herbicide (glyphosate). GE soybeans have been found to contain residue levels as high as 17 mg/kg, and malformations in frog and chicken embryos have occurred at just over 2 mg/kg.

Processed food is perhaps the most damaging aspect of most people's diets, contributing to poor health and chronic disease.

One of the primary culprits is high fructose corn syrup, the dangers of which I touch on in virtually every article I write on diets. The second culprit is partially hydrogenated soybean oil.

These two ingredients, either alone or in combination, can be found in virtually all processed foods, and one can make a compelling argument that the reliance on these two foods is a primary contributing factor for most of the degenerative diseases attacking Americans today.

Part of the problem with partially hydrogenated soybean oil is the trans fat it contains.

The other part relates to the health hazards of soy itself. An added hazard factor is the fact that the majority of both corn and soybeans are genetically engineered.

As the negative health effects from trans fats have been identified and recognized, the agricultural and food industry have scrambled to come up with new alternatives.

Partially hydrogenated soybean oil has been identified as the main culprit and for good reason.

Unfortunately, saturated fats are still mistakenly considered unhealthy by many health "experts," so, rather than embracing truly healthful tropical fats like coconut oil, which is mostly grown outside the U.S., the food industry has instead turned to domestic U.S. alternatives offered by companies like Monsanto, now Bayer (which bought out Monsanto in 2018), which has developed modified soybeans that don't require hydrogenation.

Why hydrogenate?

Americans consume more than 16 million metric tons of edible oils annually, and soybean oil accounts for about 11,339 metric tons of it.

Until Monsanto genetically engineered its seeds to produce plants lower in linolenic acid, about half of it was hydrogenated, as regular soybean oil is too unstable otherwise to be used in food manufacturing.

One of the primary reasons for hydrogenating oil is to prolong its shelf life. Raw butter, for example, is likely to go rancid far quicker than margarine.

The process also makes the oil more stable and raises its melting point, which allows it to be used in various types of food processing that uses high temperatures.

Hydrogenated oil is made by forcing hydrogen gas into the oil at high pressure. Virtually any oil can be hydrogenated. Margarine is a good example, in which nearly half of the fat content is trans fat.

The process that creates partially hydrogenated oil alters the chemical composition of essential fatty acids, such as reducing or removing linolenic acid, a highly reactive triunsaturated fatty acid, transforming it into the far less reactive linoleic acid, thereby greatly preventing oxidative rancidity when used in cooking.

In the late 1990s, researchers began realizing this chemical alteration might actually have adverse health effects. Since then, scientists have verified this to the point of no dispute.

Be aware that there's a difference between "fully hydrogenated" and "partially hydrogenated" oils. Whereas partially hydrogenated oil contains trans fat, fully hydrogenated oil does not, as taking the hydrogenation process "all the way" continues the molecular transformation of the fatty acids from trans fat into saturated fatty acids.

Fully hydrogenated soybean oil is still not a healthy choice, however, for reasons I'll explain below. The following slide presentation explains the technical aspects relating to the hydrogenation process.

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The health hazards of trans fats

The completely unnatural man-made fats created through the partial hydrogenation process cause dysfunction and chaos in your body on a cellular level, and studies have linked trans fats to:

- **Cancer**, by interfering with enzymes your body uses to fight cancer.
- **Chronic health problems** such as obesity, asthma, auto-immune disease, cancer and bone degeneration.
- **Diabetes**, by interfering with the insulin receptors in your cell membranes
- **Heart disease**, by clogging your arteries (Among women with underlying coronary heart disease, eating trans-fats increased the risk of sudden cardiac arrest three-fold!).
- **Decreased immune function**, by reducing your immune response.
- **Increased blood levels of low-density lipoprotein (LDL)**, or "bad" cholesterol, while lowering levels of high-density lipoprotein (HDL), or "good" cholesterol.
- **Reproductive problems** by interfering with enzymes needed to produce sex hormones.
- **Interfering with your body's use** of beneficial omega-3 fats.

As usual, it took many years before conventional health recommendations caught up and began warning about the use of trans fats.

Not surprisingly, as soon as the U.S. Food and Drug Administration (FDA) notified them that it planned to require food manufacturers to list trans fat content on the label — which ultimately took effect Jan. 1, 2006 — the industry began searching for viable alternatives to appeal to consumers who increasingly began looking for the "no trans fat" designation.

It didn't take long before Monsanto had tinkered forth a genetically engineered soybean that is low in linolenic acid, which we'll get to in a moment.

Be aware that some food manufacturers have opted to simply fool buyers — a tactic allowed by the FDA, as any product containing up to half a gram of trans fat per serving can still legally claim to have zero trans fat.

The trick is to reduce the serving size to bring it below this threshold. At times, this will result in unreasonably tiny serving sizes, so any time you check a label and a serving is something like 10 chips or one cookie, it probably contains trans fats.

The health hazards of soybeans

Besides the health hazards related to the trans fats created by the partial hydrogenation process, soybean oil is, in and of itself, NOT a healthy oil.

Add to that the fact that the majority of soy grown in the U.S. is genetically engineered, which may have additional health consequences. When taken together, partially hydrogenated GE soybean oil becomes one of the absolute worst types of oils you can consume.

Years ago, tropical oils, such as palm and coconut oil, were commonly used in American food production.

However, these are obviously not grown in the U.S., as with the exception of Hawaii, our climate isn't tropical enough. Spurred by financial incentives, the industry devised a plan to shift the market from tropical oils to something more "homegrown."

As a result, a movement was created to demonize and vilify tropical oils in order to replace them with domestically grown oils such as corn and soy.

The fat in soybean oil is primarily omega-6 fat. And while we do need some omega-6, it is rare for anyone to be deficient in it, as it is pervasive in our diet.

Americans in general consume FAR too much omega-6 in relation to omega-3 fat, primarily due to the excessive amount of omega-6 found in processed foods.

Omega-6 fats are in nearly every animal food and many plants, so deficiencies are very rare. This omega-6 fat is also highly processed and therefore damaged, which compounds the problem of getting so much of it in your diet.

The omega-6 found in soybean oil promotes chronic inflammation in your body, which is an underlying issue for virtually all chronic diseases.

What about organic soybean oil?

Even if you were fortunate enough to find organic soybean oil, there are still several significant concerns that make it far from attractive from a health standpoint.

Soy in and of itself, organically grown or not, contains a number of problematic components that can wreak havoc with your health, such as:

Goitrogens — Goitrogens, found in all unfermented soy whether it's organic or not, are substances that block the synthesis of thyroid hormones and interfere with iodine metabolism, thereby interfering with your thyroid function.

Isoflavones: genistein and daidzein — Isoflavones are a type of phytoestrogen, which is a plant compound resembling human estrogen, which is why some recommend using soy therapeutically to treat symptoms of menopause. I believe the evidence is highly controversial and doubt it works.

Typically, most of us are exposed to too many estrogen compounds and have a lower testosterone level than ideal, so it really is important to limit exposure to feminizing phytoestrogens. Even more importantly, there's evidence it may disturb endocrine function, cause infertility and promote breast cancer, which is definitely a significant concern.

Phytic acid — Phytates (phytic acid) bind to metal ions, preventing the absorption of certain minerals, including calcium, magnesium, iron and zinc — all of which are co-factors for optimal biochemistry in your body. This is particularly problematic for vegetarians because eating meat reduces the mineral-blocking effects of these phytates.

Sometimes it can be beneficial, especially in postmenopausal women and in most adult men because we tend to have levels of iron that are too high, which can be a very potent oxidant and cause biological stress. However, phytic acid does not necessarily selectively inhibit just iron absorption; it inhibits all minerals. This is very important to remember, as many already suffer from mineral deficiencies from inadequate diets.

The soybean has one of the highest phytate levels of any grain or legume, and the phytates in soy are highly resistant to normal phytate-reducing techniques such as long, slow cooking. Only a long period of fermentation will significantly reduce the phytate content of soybeans.

Natural toxins known as "anti-nutrients" — Soy also contains other anti-nutritional factors such as saponins, soyatoxin, protease inhibitors and oxalates. Some of these factors interfere with the enzymes you need to digest protein. While a small amount of anti-nutrients would not likely cause a problem, the amount of soy that many Americans are now eating is extremely high.

Hemagglutinin — Hemagglutinin is a clot-promoting substance that causes your red blood cells to clump together. These clumped cells are unable to properly absorb and distribute oxygen to your tissues.

Worst of all — genetically engineered soybean oil

The genetically engineered (GE) variety planted on over 90% of U.S. soy acres is Roundup Ready — engineered to survive being doused with otherwise lethal amounts of Monsanto's Roundup herbicide.

The logic behind Roundup Ready crops such as soy is that you can decrease the cost of production by killing off everything except the actual soy plant.

However, animal studies reveal there may be significant adverse health effects from these GE soybeans, including progressively increased rates of infertility with each passing generation.

By the third generation, virtually all the hamsters in one feeding study were found to be infertile. Second-generation hamsters raised on GE soy also had a fivefold higher infant mortality rate.

Are low-linolenic soybeans the answer?

We now also have other Monsanto-made soy crops to contend with. Responding to the growing demand for healthier diets, Monsanto launched Vistive low-linolenic soybeans in 2005. Most soybeans contain roughly 7% linolenic acid. The new varieties contain 1% to 3%, which reduces the need for hydrogenation.

As explained by Monsanto:

> "Farmers are not the only beneficiaries of Monsanto's efforts … Consumers will also benefit from the healthier crops that could result, such as soybeans that are low in linolenic acid. Linolenic acid, a precursor to trans fats, may contribute to cardiovascular disease …
>
> "Low-linolenic soybeans reduce the need for hydrogenation in food processing, helping to reduce the amount of trans fats in processed foods."

Yet another soybean variety created by Monsanto is the high-stearate soybean, which also has the properties of margarine and shortening without hydrogenation.

But are these soybeans any better or safer than either conventional soybeans or Roundup Ready soybeans, even though they don't have to go through partial hydrogenation, and therefore do not contain trans fat? No one knows.

Another hazard of GE soybeans: Glyphosate

I keep stacking health risks upon health risks, and here's another one: Research has shown that soybean oil from Roundup Ready soy is loaded with glyphosate, the main ingredient in Roundup — the broad-spectrum herbicide created by Monsanto.

According to a report in the journal Chemical Research in Toxicology, the highest MRL for glyphosate in food and feed products in the EU is 20 mg/kg. GE soybeans have been found to contain residue levels as high as 17 mg/kg, and malformations in frog and chicken embryos occurred at 2.03 mg/kg. That's 10 times lower than the MRL.

This is an alarming finding because glyphosate is easily one of the world's most overlooked poisons.

Research published in 2010 showed that the chemical, which works by inhibiting an enzyme called EPSP synthase that is necessary for plants to grow, causes birth defects in frogs and chicken embryos at far lower levels than used in agricultural and garden applications. The malformations primarily affected the:

- Skull
- Face
- Midline and developing brain
- Spinal cord

When applied to crops, glyphosate becomes systemic throughout the plant, so it cannot be washed off.

And, once you eat this crop, the glyphosate ends up in your gut where it can decimate your beneficial bacteria.

This can wreak havoc with your health, as 80% of your immune system resides in your gut (GALT, or Gut Associated Lymph Tissue) and is dependent on a healthy ratio of good and bad bacteria. Separate research has also uncovered the following effects from glyphosate:

- Endocrine disruption
- DNA damage
- Developmental toxicity
- Neurotoxicity
- Reproductive toxicity
- Cancer

To avoid harmful fats, ditch processed foods

If you want to avoid dangerous fats of all kinds, your best bet is to eliminate processed foods from your diet. From there, use these tips to make sure you're eating the right fats for your health:

- Use organic butter (preferably made from raw milk) instead of margarines and vegetable oil spreads. Butter is a healthy whole food that has received an unwarranted bad rap.
- Use coconut oil for cooking. It is far superior to any other cooking oil and is loaded with health benefits.
- Be sure to eat raw fats, such as those from avocados, raw dairy products, olive oil, olives, organic pastured eggs and raw nuts, especially macadamia nuts which are relatively low in protein. Also take a high-quality source of animal-based omega-3 fat, such as krill oil.

Following my comprehensive nutrition plan will automatically reduce your trans-fat intake, as it will give you a guide to focus on healthy whole foods instead of processed junk food.

Remember, virtually all processed foods will contain either high fructose corn syrup (probably made from genetically engineered corn) and/or soybean oil — either in the form of partially hydrogenated soybean oil, which is likely made from GE soybeans, loaded with glyphosate or from one of the newer soybean varieties that were created such that they do not need to be hydrogenated.

They're ALL bad news if you value your health.

Originally published by Mercola.

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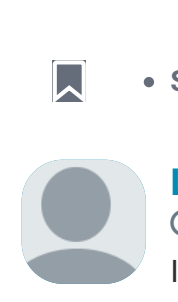

Dr. Joseph Mercola
Dr. Joseph Mercola is the founder of Mercola.com.

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Leslie Taylor
9 days ago edited
I was getting quite sick to my stomach to the extent I thought, as others had suggested, that I had a serious stomach problem. I go to the doctor only as a last resort, after I've exhausted all other remedies. Years ago I noticed that potato chips made me ill, quit eating them and completely forgot about the reaction. Eventually, I narrowed the next, much later, phase of getting sick to my stomach problem down to following having eaten tortilla chips, with salsa usually (which I quit thinking that was the source) once or twice weekly with a glass of wine or margarita. Then I tried all different types of tortilla chips: flour, corn, blue corn, and multigrain all resulting in making me quite ill. Since, I've quit eating chips altogether. It probably is due the oil they are cooked in as Mercola here has proposed. The condition has not occurred since, well over a year now.
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Barbara Elliott Pharr
8 days ago
I was having so much pain from inflammation in my body, I went to doctors that prescribe medications that made my health worse. This has been going on for years, sometimes I have to go to bed with a heating blanket to elevate the aches and pains. I was taking large amounts of Ibuprofen, pain meds, muscle relaxers and anything that would help me do my daily activities.
I had some blood work done in Sept. 2022, it showed I had severe plaque in my arteries, my kidney function was on the severe side and my bones are very weak and low red blood cells, high cholesterol and high triglycerides among other things I decided I had to stop eating all this poison every day.
I knew our food chain was really getting bad as far as trying to kill us. I did my own research and found the only way to rid my body of this junk was to go on a juice fast or water fast. Which I did for three days, then I make all organic vegetable soup, and that is all I ate for a month or more, I slowly added organic fruits and other vegetables. Salads and my own dressing made with avocados, organic apple cider vinegar, lemon juice a touch of salt and garlic powder. I also found organic bread so I wouldn't be eating any bad stuff. lots of water.
It has been going on three months and I feel wonderful, I got rid of the daily aches and pains all the time, I lost 30 lbs. on top of it all which I didn't factor in but was a pleasant
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Paul
9 days ago
Isn't Coconut Oil trans-fat level quite high compared to other oils? Can you provide a table showing all type of oils?
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Roz Loutsios
9 days ago
Thank you Dr. Mercola for this important information. I used Soya milk for my breakfast for a very long time and then eventually I realised that perhaps milk coming from soya beans may not really be such a good idea. Now, I avoid it altogether. .I've also avoided all types of bread because I believe that all wheat grains must also be containing toxins from glyphosate. Does anybody know whether Canadian farmers are still using glyphosate in their wheat which is then going to be used in all the breads? Any valuable information would be much appreciated.
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> **Ken Swiatek** → Roz Loutsios
> 9 days ago
> In theory organic non GMO foods should be healthier. I only buy organic old fashioned oats.
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>
> **Barbara Elliott Pharr** → Roz Loutsios
> 8 days ago
> I only use almond milk and there is organic flour and many other things to avoid these toxins.
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Carrie Lavine
7 days ago
Soybean oil is bad in so many ways-first the trans fats from the partially hydrogenated process..yet never knew what that process involved-.probably also alters chemical structure too-very carcinogenic add to that--most soybeans are GMO thus-saturated with Glyphosate.
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mcwinaz
7 days ago
I don't eat soy all that often, and I agree w/Mercola to check labels and avoid hydrogenated oils AND HFCS, but I do do eat tofu and if there is something with soy in it (not the oil) I stick to organic variety. I go to a functional med Dr and my labs are good. Appreciate the article, but not changing anything..
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Barbara Elliott Pharr
8 days ago
I was having so much pain from inflammation in my body, I went to doctors they prescribe medications that made my health worse. This has been going on for years, sometimes I have to go to bed with a heating blanket to alleviate the aches and pains. I was taking large amounts of Ibuprofen, pain meds, muscle relaxers and anything that would help me do my daily activities.
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It has been going on three months and I feel wonderful, I got rid of the daily aches and
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Voyt Regnal
9 days ago
Mercola as always..creates exaggeration and unnecessary panic. Instead of writing long and complex column again and again, I would simply like to see the detailed list of ultra and processed foods that contain this "evil" corn syrup and/or soybean oil etc.

I eat processed food from time to time I figure, but never overindulge on anything. My weight and blood tests are always all right. I walk a lot and swim often.

According to this article, bread, cheese, canned tuna is processed food...should I stop rating bread? ....nonsense.

https://www.ncbi.nlm.nih.go...
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> **ralphdevane@msn.com** → Voyt Regnal
> 7 days ago
> Some of us want to know the "why" behind his recommendations. As a former avocado farmer who began looking into how our foods are grown and made, Mercola provides helpful information about how much of the food we have grown and eaten has been degraded. He and others have often spoken about the importance of gut health and its relation to the brain health has been largely ignored which is why we are seeing increased illness that are neurologically related. Our foods today no longer have the same nutritional value of those of 100 years ago and unhealthy fillers have been added. Over a period of time even a small amount of some of these fillers will negatively affect one or more of ones system. If you want to continue eating the same foods, have at it. Our food providers have proven they don't deserve a blanket trust from us.
> 0 0 • Reply • Share ›
>
> **Barbara Elliott Pharr** → Voyt Regnal
> 8 days ago
> It is most certainly true!!! I stopped eating bread, oils anything with flour in it. Do your research you will find out it is all true.
> 0 0 • Reply • Share ›

Ty Shlackman
9 days ago
Soy is very unhealthy but so are many of the foods Dr. Mercola promotes so don't listen to his health advice. He's full of misinformation about nutrition.
0 1 • Reply • Share ›

> **BChristine** → Ty Shlackman
> 9 days ago
> Absolutely NOT true. Misinformation about nutrition has been ongoing with conventional nutritionists, USDA, FDA and so-called "trusted associations" like the AMA for MANY decades. They are ones who have in the past (and some still do) recommend vegetable oils, trans-fats, low-fat everything, etc.; and you can see where that has gotten us through the years. Look at our history of food

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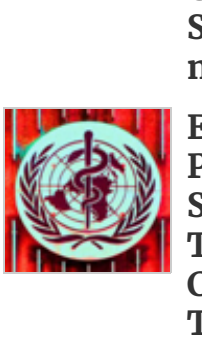
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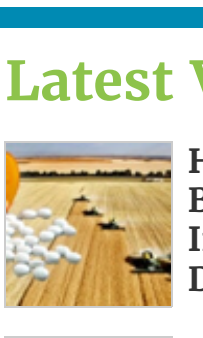
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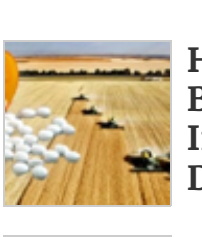
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and health. Following mainstream 'nutrition' and government guidelines will only set you up to be a victim of our broken sick-care system and BIG Pharma. Dr. Mercola is one of the leaders in cutting-edge health. Don't fall for the actual "misinformation" out there.

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Barbara Elliott Pharr → BChristine

8 days ago

Amen, I found out the hard way.

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Barbara Elliott Pharr → Ty Shlackman

8 days ago

Are you serious? please give us details on what is misinformation.

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